



Clark County Fire Department

FIRE PREVENTION BUREAU

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PERMIT GUIDE

CARBON DIOXIDE FOR BEVERAGE DISPENSING

This guide is to assist in the permitting process for obtaining an annual renewable operational permit for liquid carbon dioxide in beverage dispensing applications. Gaseous CO₂ systems that use a single-valve high pressure cylinder are not covered by this guide. An annually renewable operational permit is required per section 105.6.8 of the IFC.

PERMIT REQUIREMENTS:

New Operational Permits are required if the system exceeds 100lbs of liquid carbon dioxide (CO₂).

Existing Systems that are currently installed but are not being modified or changed are permitted based on the original system installation dates;

- Existing systems that were installed prior to July 7, 2014; only require a Compressed Gas Permit if the existing tank has greater than 6,000 cubic feet or 88 gallons of liquid CO₂.
- Existing systems that were installed indoors between July 7, 2014 and February 6, 2019 require CO₂ monitoring system. If liquid CO₂ tank is installed outdoors a monitoring system is not required.
- Any liquid CO₂ tank installed after February 6, 2019 will follow this permit guide.

APPLICABLE CODES:

The following codes and standard apply to this permit.

- *International Fire Code*, 2018 edition (IFC)
- *Clark County Fire Code Amendments*, 2018 edition (CCFC)
- *Standard System for the Identification of the Hazards of Materials for Emergency Response*, 2017 Edition NFPA 704
- *Compressed Gases and Cryogenic Fluids Code*, 2016 edition NFPA 55

Link to CCFC: See the amendments to codes using the link below:

https://cms8.revize.com/revize/clarknv/Building%20&%20Fire%20Prevention/Codes/ClarkCounty_FireCodeAmendments2018.pdf?t=1598331770575&t=1598331770575

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SUBMITTAL REQUIREMENT CHECKLIST:

The listed requirements in this guide are not intended to be all inclusive, nor do they entail a limit to the extent of the information, etc., which may be necessary to properly evaluate the submitted plans and documents. Not all items may apply to your project.

Construction Documents: The submittal shall include all information per IFC Section 5307.4.1 and Chapter 13 of NFPA 55.

Provide all applicable information that pertains to your permit;

1. Project name, address, and APN (Assessor’s Parcel Number).
2. Contractor’s/Owner’s contact information.
3. Provide **Plan** showing the following locations:
 - a. **BUILDING:**
 - Provide a diagram of the building and all areas of the project.
 - b. **TANK:**
 - Include make and model of tank including the size of CO2 in pounds (lbs.)
 - Show tank location.
 - Provide information on tank restraint.
 - c. **PIPING:** Show piping routing and connections on plans to the following locations;
 - Clarify pipe type include make/model; ensure it is suitable for gaseous/liquid carbon dioxide service.
 - Provide fill box and vent location and routing to tank. (Placing the fill box as close as possible to the bulk tank is recommended.)
 - Provide gaseous CO2 supply line from bulk tank to the “bag in box” soda syrup containers.
 - Provide a diagram of the “bag in box” soda syrup supply line routing to the beverage dispenser.
 - d. **SIGNAGE:** Provide the location of the required signage on plans and provide examples of each on plans:
 - An NFPA 704 hazard identification placard is required on the exterior door.



Liquid CO2 NFPA 704 placard:

- As required by the IFC, a CO2 warning signage shall be posted outside of the room or enclosure and where the tank is located. It shall be at least 8 inches wide and 6 inches high and state exactly:

CAUTION – CARBON DIOXIDE GAS

VENTILATE THE AREA BEFORE ENTERING.

A HIGH CARBON DIOXIDE (CO2)

GAS CONCENTRATION

IN THIS AREA

CAN CAUSE ASPHIXIATION

e. NOTIFICATION:

- A CO2 detection alarm horn and strobe are required at the exterior door (to warn people not to enter) and at the primary monitor at the tank (to warn people inside of an alarm).
- The CO2 detection alarm strobe must be a tinted (colored) and not with a clear lens as not to be confused with fire alarm and audible must be at least 15dB louder than ambient.
- CO2 detection alarms are local to the CO2 system and are not required to be connected to a fire alarm system or monitored by a fire alarm supervising station.

f. SYSTEM ACTIVATION:

The submittal should include these details verifying that the liquid CO2 monitoring system will activate as intended.

- Monitor location (usually at the tank)
 - CO2 sensors locations; including tank location, and any room or compartment where the liquid filled lines pass through.
 - Correct sensor set points: 5,000ppm for a supervisory alarm at a normally attended location and at 30,000ppm to activate an audible and visual alarm within the room or immediate area and also stop the flow of CO2 (usually by solenoid).
 - The sensor mounting height at 12 inches above finished floor or per manufacturer's specifications.
4. Provide a copy of manufacturer's specification sheets for all components including; the tank, supply lines, fill lines, CO2 monitors, tank strapping, vent line, exterior fill box and CO2 signage. All equipment shall be listed for its use.

PERMIT DURATION:

Carbon Dioxide Liquid in Restaurants are Operational Permits and are limited to a duration of one (1) year and shall be renewed annually. If any changes are made; revisions will need to be submitted.